CLAIMS

1.   A method for delivery of a therapeutic neurotrophin to targeted defective, diseased or damaged neurons in the mammalian brain, the method comprising delivering a neurotrophic composition, comprising a neurotrophin encoding lentiviral expression vector, into one or more delivery sites within a region of the brain containing targeted neurons; wherein the neurotrophin is expressed in, or within 500 μm from, a targeted cell, and no more than about 10 mm from another delivery site; and wherein further contact with the neurotrophin ameliorates the defect, disease or damage.

2.   The method according to Claim 1, wherein the region of the brain containing the targeted neurons is the substantia nigra.

3.   The method according to Claim 2, wherein the targeted neurons are dopaminergic neurons.

4.   The method according to Claim 1, wherein the viral expression vector is HIV-1.

5.   The method according to Claim 1, wherein the neurotrophic composition is a fluid having a concentration of neurotrophin encoding lentiviral particles in the range from 10^{10} to 10^{15} particles per ml of neurotrophic composition.

6.   The method according to Claim 5, wherein from 2.5 μl to 25 μl of the neurotrophic composition is delivered to each delivery site.

7.   The method according to Claim 1, wherein the treated mammal is a human and the transgene encodes a human neurotrophin.

8. The method according to Claim 7, wherein the neurotrophin is human glial cell-derived neurotrophic factor (GDNF).

9. The method according to Claim 7, wherein the human is suffering from Parkinson's disease, and the disease is ameliorated by stimulation of growth of dopaminergic neurons.

10. The method according to Claim 9, wherein the disease is ameliorated by reversal of deficits in motor function associated with the Parkinson's disease.

11. The method according to Claim 7, wherein the human is suffering from Alzheimer's disease, and the disease is ameliorated by stimulation of growth of cholinergic neurons.

12. The method according to Claim 11, wherein the disease is ameliorated by improvement of cognitive function whose impairment was associated with Alzheimer's disease.